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October 20, 2003

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Natural Resources Conservation Service
USDA-Natural Resources Conservation Service
101 South Main
Temple, Texas 76501

Dear Dr. Butler:

This document transmits the U.S. Fish and Wildlife Service's [Service] biological opinion based on our review of U.S. Department of Agriculture's [USDA], Natural Resources Conservation Service [NRCS], activities associated with the Leon River Restoration Project [LRRP] in Hamilton County and Coryell County, Texas, and its effects on the federally listed black-capped vireo [BCV] (*Vireo atricapilla*) and golden-cheeked warbler [GCW] (*Dendroica chrysoparia*). The specific actions under consultation include funding LRRP land treatment practices through the Environmental Quality Incentive Program [EQIP] and the implementation of project guidelines developed by NRCS for the LRRP.

The LRRP provides landowners in the Leon River watershed technical and financial assistance in implementing land treatment practices directed at improving the quality and quantity of water within the watershed. An objective of the project involves improving wildlife habitat by treating regrowth Ashe juniper (*Juniperus ashei*) and controlling both mesquite (*Prosopis* spp.) and prickly pear (*Opuntia* spp.).

This biological opinion has been prepared in accordance with Section 7 of the Endangered Species Act [Act] of 1973, as amended (16 U.S.C. 1531 et seq.) The biological opinion is based on NRCS developed *BCV Habitat Identification/Treatment Criteria for the Leon River Restoration Project in Hamilton and Coryell Counties* (Enclosure 1) and *GCW Habitat Identification/Treatment Criteria for the Leon River Restoration Project in Hamilton and Coryell Counties* (Enclosure 2) project guidelines, information provided by Mr. Gary Valentine (State Biologist, NRCS), Mr. Steve Manning (Project Officer, LRRP), and Dr. Robert N. Wilkins (Associate Professor and Extension Specialist, Texas A&M University), field investigations, and other sources of information. A complete administrative record of this consultation is on file at the Service's Arlington, Texas, Ecological Services Field Office.

Consultation History

August 1, 2003: Representatives from the NRCS, Texas Parks and Wildlife Department [TPWD], Texas Department of Agriculture, Texas A&M University, LRRP, and several non-governmental organizations met with the Service to discuss EQIP funding to be utilized for land treatment practices and project guidelines developed by the NRCS for implementation within the LRRP. At the meeting, the NRCS determined that some of the land treatment practices, as described, would adversely affect the BCV and GCW.

August 12, 2003: The Service received a letter from the NRCS, dated August 8, 2003, requesting that formal consultation be initiated. On September 3, 2003, the Service acknowledged the initiation of formal consultation as of August 12, 2003.

August 28, 2003: Revised *Management Guidelines for the Black-capped Vireo* [BCV management guidelines] and *Management Guidelines for the Golden-cheeked Warbler in Rural Landscapes* [GCW management guidelines] were released by TPWD. These guidelines will be incorporated into Endangered and Threatened Animals of Texas - Their Life History and Management (Campbell 1995). If these management guidelines are followed during project activities, take of the BCV or GCW would not occur and authorization under the Act would not be required.

September 9, 2003: Representatives of the Service, NRCS, LRRP, TPWD, Texas A&M University, and Texas Farm Bureau met to identify the manner and extent of impacts that the proposed project would have upon the BCV and GCW in addition to modifying and clarifying the land treatment practices and guidelines developed by the NRCS as part of the LRRP.

BIOLOGICAL OPINION

I. Description of Proposed Action

The proposed action is the funding of land treatment practices through EQIP and implementation of NRCS guidelines for the LRRP within the Leon River watershed in Coryell County and Hamilton County, Texas (Figure 1). The NRCS guidelines for BCV habitat recommend land treatment practices such as fencing (code 382), livestock water pipeline construction (code 516), water storage facility construction (code 614), pond construction (code 378), water diversion construction (code 362), prescribed burning (code 338), prescribed grazing (code 528A), and mechanical and herbicidal brush management (code 314). The NRCS guidelines for GCW

habitat recommend land treatment practices such as fencing (code 382), livestock water pipeline construction (code 516), water storage facility construction (code 614), pond construction (code 378), prescribed grazing (code 528A), and mechanical brush management (code 314). An explanation of these practices can be found in the NRCS Field Office Technical Guides for Hamilton County and Coryell County.

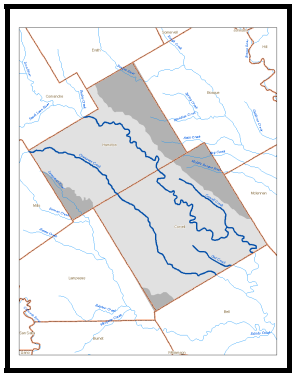

Figure 1 Leon River watershed.

Modifications and clarification to the NRCS guidelines were made during the September 9, 2003, meeting referenced above. The modifications included: 1) the season of operation for mechanical brush management (using hydraulic shearing, chain sawing, tree-grubbing, and/or tree-dozing) in BCV habitat is from August 1st to March 15th; and 2) hand-cutting utilizing hand tools may occur year-round in BCV habitat. Practices such as fencing, livestock water pipeline construction, water storage facility construction, pond construction, water diversion construction, prescribed burning, prescribed grazing, and herbicidal brush management will be implemented in accordance to the revised BCV management guidelines. Take of the BCV would not occur if these guidelines are implemented. Therefore, these land treatment practices are not discussed further in this biological opinion and no take of BCVs is authorized by fencing, livestock water pipeline construction, water storage facility construction, pond construction, water diversion construction, prescribed burning, prescribed grazing, and/or herbicidal brush management. This biological opinion focuses on the season of operation and/or impacts of mechanical brush management upon the BCV.

Modifications and clarification to the NRCS guidelines were made to the season of operation for mechanical brush management (using hydraulic shearing and/or chain sawing) in GCW habitat. The season of operation will be from August 1st to March 15th. Practices such as water facility construction and pond construction will be implemented in accordance to the revised GCW management guidelines, and take of the GCW is not anticipated to occur. Therefore, these land treatment practices are not discussed further in this biological opinion and no take of GCWs is authorized by water facility construction and pond construction. This biological opinion focuses on the season of operation and/or impacts of mechanical brush management upon the GCW, the thinning of mature Ashe juniper to a 15% juniper canopy cover while maintaining a total tree canopy of at least 75%, and the impacts of increasing fence and pipeline right-of-ways from the recommended management width of 16 feet to 20 feet (4.9 meters to 6.1 meters).

LRRP is expected to receive USDA funds annually until the next Farm Bill is authorized and funded, and possibly thereafter. EQIP contracts will be signed for periods up to 5 years. Wildlife management plans prepared by TPWD and conservation plans prepared by NRCS will be applied in accordance with NRCS guidelines over a period of at least 10 years. USDA anticipates that many landowners will continue with these management systems after their contracts and this project expires.

II. Status of the Species/Environmental Baseline

The whooping crane (*Grus americana*), found on the Service's list of endangered species for Coryell County, is not expected to occur in the action area. In an unlikely event that the species did occur in the action area, the proposed actions would have no effect on the whooping crane. Therefore, this species will not be discussed in this biological opinion, and no take of this species is authorized.

Two federally listed endangered species that do occur in the action area and that may be affected by the proposed actions include the BCV and GCW. The BCV was listed by the Service in 1987 (52 FR 37423). The Service emergency listed the GCW on May 4, 1990 (55 FR 18844) and published a final rule on December 27, 1990 (55 FR 53160). Critical habitat has not been designated for either of these species. The recovery plans for the BCV and for the GCW were finalized on September 30, 1991, and September 30, 1992, respectively.

Black-capped Vireo

The BCV is a 4.5 inch (114 millimeters) long, insect-eating songbird. Mature males are olive green above and white below with faint greenish-yellow flanks. The crown and upper half of the head is black with a partial white eye-ring. The iris is brownish-red and the bill black. The plumage of the female is duller than the male. Females have a dark slate gray head (USFWS 1991).

BCVs arrive in Texas from mid-March to mid-April, while BCVs in Oklahoma arrive there approximately 10 days later. They nest from Oklahoma south through central Texas to the Edwards Plateau (Figure 2), then south and west to central Coahuila, Mexico. A pair will most often be monogamous for the breeding season, selecting a nest site together, while the female completes nest construction in 2 to 3 days. BCVs suspend their nests in the forks of shrubs in dense underbrush, from 1 to 6 feet (0.3 to 0.9 meters) above the ground; most nests are found around 3-foot (0.9 meters) above ground. Three to four eggs are usually laid in the first nesting attempt, but later clutches may only contain 2 to 3 eggs. The first egg is usually laid one day after nest completion, with one egg being laid each subsequent day. Incubation takes 14 to 17 days, and is shared by both the male and female. BCV chicks are fed by both adults as well, and leave the nest 10 to 12 days after hatching (Campbell 1995).

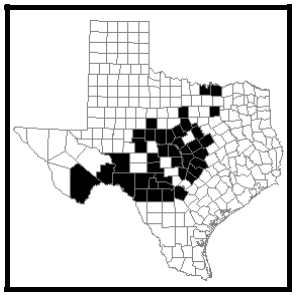

Figure 2 Black-capped vireo nesting occurences.

Although BCV habitat throughout Texas is quite variable with respect to plant species, soils, and rainfall, all habitat types have a similar overall appearance. BCVs typically inhabit shrublands and open woodlands with a distinctive patchy structure. The shrub vegetation generally extends from the ground to about 6 feet (1.8 meters) above ground and covers about 30% to 60% of the total area. Open grassland separates the clumps of shrubs. In the eastern portion of the BCV's range, the shrub layer is often combined with an open, sparse to moderate tree canopy. In the Edwards Plateau and Cross Timbers regions, common plants in BCV habitat include Texas oak (*Quercus*

buckleyi), Lacey oak (*Quercus glaucoides*), white shin oak (*Quercus sinuata* var. *breviloba*), Durand oak (*Quercus durandii*), live oak (*Quercus fusiformis*), mountain laurel (*Kalmia latifolia*), evergreen sumac (*Rhus virens*), skunkbush sumac (*Rhus trilobata*), flameleaf sumac (*Rhus copallina*), redbud (*Cercis canadensis*), Texas persimmon (*Diospyros texana*), mesquite, and agarita (*Berberis trifoliolata*). Densities of Ashe junipers are usually low. In the western Edwards Plateau and Trans-Pecos regions, BCVs are often found in canyon bottoms and slopes containing plants such as sandpaper oak (*Quercus pungens*), white shin oak, Texas kidneywood (*Eysenhardtia texana*), Mexican walnut (*Juglans microcarpa*), fragrant ash (*Fraxinus cuspidata*), mountain laurel, and guajillo (*Acacia berlandieri*). In certain portions of the Edwards Plateau, habitat for the BCV represents an early successional stage in a process that eventually results in habitat for the GCW (USFWS 2000a).

Threats to the BCV include habitat loss and degradation due to development, habitat succession, grazing practices not conducive to BCV recovery, brown-headed cowbird (*Molothrus ater*) [cowbird] parasitism, and low reproductive success. Throughout the Hill Country, much of the BCV's habitat has been destroyed or degraded by residential and commercial development, grazing practices, and fire suppression. Areas that are no longer suitable due to livestock overutilization or habitat succession can potentially be restored by implementing prescribed grazing standards or by implementing a program of prescribed fire (USFWS 2000a).

BCVs may live for more than 5 years, and usually return year after year to the same territory. The birds begin to migrate to wintering grounds on Mexico's western coast in July, and are gone from Texas by mid-September (Campbell 1995).

Golden-cheeked Warbler

The GCW is a small, insectivorous songbird, 4.5 to 5 inches (114 to 127 millimeters) long, with a wingspan of about 8 inches (203 millimeters). The male has a black back, throat, and cap, and yellow cheeks with a black stripe through the eye. Females are similar, but less colorful. The lower breast and belly of both sexes are white with black streaks on the flanks (USFWS 1992).

The GCW nests in the juniper-oak woodlands of the Texas Hill Country and winters in the pine-oak woodlands of southern Mexico, Guatemala, Honduras, and Nicaragua. Its entire nesting range is confined to 33 counties in central Texas (Figure 3). Typical nesting habitat is found in tall, dense, mature stands of Ashe juniper mixed with deciduous trees such as Texas oak, Lacey oak, white shin oak, live oak, post oak (*Quercus stellata*), Texas ash (*Fraxinus texensis*), cedar elm (*Ulmus crassifolia*), hackberry (*Celtis occidentalis*), bigtooth maple (*Acer grandidentatum*), sycamore (*Platanus occidentalis*), Arizona walnut (*Juglans major*), escarpment cherry (*Prunus serotina*), and pecan (*Carya illinoinensis*). This type of woodland is often found in relatively moist areas such as steep-sided canyons and slopes. GCWs are also occasionally found in drier, upland juniper-oak, i.e., live oak, post oak, blackjack oak (*Quercus marilandica*) woodlands over flat topography. Although

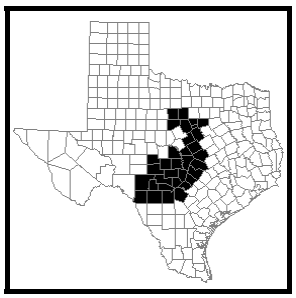

Figure 3 Golden-cheeked warbler nesting occurrences.

the composition of woody vegetation may vary from place to place, Ashe juniper is always present. In general, GCWs prefer stands with a moderate to high density of older trees and dense foliage in the upper canopy (USFWS 2000a).

The males arrive in central Texas around March 1st and begin to establish breeding territories, which they defend against other males by singing from visible perches within their territories. The females arrive a few days later but are more difficult to detect in the dense woodland habitat. Usually three or four eggs are laid. The average nest height is 15 feet (5.2 meters) above ground. Eggs are generally incubated in April and, unless there is a second nesting attempt, nestlings fledge in May to early June. By early August, GCWs begin their migration south (USFWS 2002).

Throughout the Hill Country, GCW habitat is disappearing due primarily to urban development. Nest parasitism by cowbirds may also adversely affect GCW populations (USFWS 2000a).

Lampasas Cut Plains Subregion of Texas

Both Coryell and Hamilton counties are located within the Lampasas Cut Plains subregion of Texas. This subregion is typically vegetated with oaks such as Texas oak, live oak, and white shin oak on the rocky Edwards limestone summits of small divides (Diggs et al. 1999). On large divides, areas of deeper soil typically support the westward extension of the Washita Prairie (Hayward et al. 1992). On the chalky thin soiled slopes derived from the underlying Comanche Peak limestone, white shin oak, sumac species, and Ashe juniper may be seen; these dry rocky areas have a distinctly desert-like microclimate (Hayward et al. 1992) and thus support plants with xerophytic adaptations. Below these slopes, on benches in valleys or on the summits of uplands lacking caprock, extensive areas of prairie can be found on the clay soils derived from the Walnut formation where it is exposed (Diggs et al. 1999). The basal Trinity Group sands (Paluxy, Antlers, Twin Mountains-Travis Peak) underlying the Walnut formation developed typical Cross Timbers vegetation such as post oak and blackjack oak (Hill 1901).

The topographic diversity and deeply cut streams found in various parts of the Lampasas Cut Plain provide important microhabitat variation. In particular, the diverse microhabitats allow the northward extension of many species otherwise found primarily on the Edwards Plateau. Some plants that were traditionally considered Edwards Plateau endemics can be found in the Lampasas Cut Plain. These include big-tooth maple, plateau gerardia (*Agalinis edwardsiana*), wild mercury (*Argythamnia aphoroides*), Wright's milk-vetch (*Astragalus wrightii*), plateau false nightshade (*Chamaesaracha edwardsiana*), scarlet clematis (*Clematis texensis*), Lindheimer's silktassel (*Garrya ovata* var. *lindheimeri*), plateau milkvine (*Matelea edwardsensis*), Lindheimer's muhly (*Muhlenbergia lindheimeri*), devil's-shoestring (*Nolina lindheimeriana*), Heller's marbleseed (*Onosmodium helleri*), Lindheimer's rock daisy (*Perityle lindheimeri*), escarpment cherry, turnip-root scrufpea (*Pediomelum cyphocalyx*), plateau spiderwort (*Tradescantia edwardsiana*), Colorado Venus'-looking-glass (*Triodanis coloradoensis*), Lindheimer's crownbeard (*Verbesina lindheimeri*), and twisted-leaf yucca (*Yucca rupicola*). When considering vegetation, soils, geologic layers, and general aspects of the landscape, some parts of the Lampasas Cut Plain are remarkably similar to the Edwards Plateau (Diggs et al. 1999).

Ashe juniper is becoming a conspicuous component of the vegetation of the Lampasas Cut Plain, often crowding out other native species (Diggs et al. 1999). Because of fire suppression, overutilization of rangeland, and natural succession, juniper has become much more common during the last century (Hayward et al. 1992). In fact, juniper is currently one of the most problematic species invading and eliminating native grassland. A similar pattern can be observed for mesquite, which was historically much less abundant than at present (Diggs et al. 1999).

III. Effects of the Action

Status of the Species within the Action Area

Based on funding of land treatment practices through EQIP and implementation of NRCS guidelines for the LRRP, the Service has determined the action area to be the Leon River watershed in Coryell County and Hamilton County, Texas. Combined, Coryell County Appraisal District and Hamilton County Appraisal District classify 773,000 acres (312,833 hectares) of the counties as rangeland with 90% of this located in the Leon River watershed (R.N. Wilkins pers. comm. 2003). Of the total land area classified as rangeland by the tax appraisal districts, approximately 50% is not considered habitat that should be surveyed for BCVs and GCWs (abandoned agricultural production fields, principally cotton, now vegetated with undesirable vegetation). Thus, approximately 350,000 acres (141,645 hectares) of rangeland containing potential BCV and GCW habitat remains within the watershed (R.N. Wilkins pers. comm. 2003). Data collection points were established in 378 locations throughout the watershed in potentially suitable BCV and GCW habitat. Presence/absence surveys for BCVs and GCWs were conducted at these data collection points utilizing standard survey protocol for the species (R.N. Wilkins pers. comm. 2003). The presence of BCVs was detected at 5.8% of these data collection points, while, the presence of GCWs was detected at 14.8% of these data collection points. Therefore, based on the best available information, approximately 20,300 acres (8,215 hectares) of BCV habitat and approximately 51,800 acres (20,963 hectares) of GCW habitat occurs within the watershed (R.N. Wilkins pers. comm. 2003).

The resource management systems planned by TPWD and NRCS in accordance with the NRCS guidelines are expected to result in an increase of BCV habitat during the life of a LRRP contract. Reducing the composition of Ashe juniper and increasing deciduous hardwoods in a stand is expected to benefit the GCW; however, more data and time will be required to confirm this expectation. While the initial application of individual land treatment practices may result in incidental take, the practices will be planned and implemented in a sequence designed to benefit both listed birds on a landscape level.

Black-capped Vireo

Practices such as fencing, livestock water pipeline construction, water storage facility construction, pond construction, water diversion construction, prescribed burning, prescribed grazing, and herbicidal brush management will be implemented in accordance to the NRCS developed guidelines for the BCV and the revised BCV management guidelines. BCV take as a result of these practices is not anticipated.

This biological opinion focuses on the proposed practices that deviate from the revised BCV management guidelines. These practices include:

1) season of operation (August 1st - March 15th) for mechanical brush management (hydraulic shearing, chain sawing, tree-grubbing, and/or tree-dozing); and,
2) year-round hand-cutting utilizing hand tools in BCV habitat.

BCVs arrive in Texas from mid-March to mid-April and begin to migrate to wintering grounds on Mexico's western coast in July, and are gone from Texas by mid-September (Campbell 1995). The BCV management guidelines recommend selective brush removal by mechanical means during the non-breeding season (September-February) to keep BCV habitat in favorable condition and avoid disturbance of the birds. The season of operation proposed within the NRCS guidelines, beginning the last 31 days (August 1st - August 31st) of the nesting season and continuing through the first 15 days (March 1st- March 15th) of the onset of the nesting season, may have an effect on the BCV. The season of operation has the potential to temporally disrupt territory defense, breeding, and foraging (Campbell 1995). Since mechanical brush management should be a single event during the life of a LRRP contract, it is anticipated that only temporal effects related to disruption, displacement, and/or harassment of the BCV will occur. Additionally the actions proposed will be self-mitigating through the creation of additional BCV habitat for the life of a LRRP contract.

BCV nesting habitat is usually associated with disturbance to vegetation that results in an earlier successional stage of growth. It has been speculated that BCV habitat, in the past, was presumably created by large natural disturbances (e.g., fires, tornadoes) to large areas on rocky substrates with shallow soils (Grzybowski 1995). Tree-grubbing and tree-dozing creates heavy disturbances to the topsoil and selectively clears vegetation from an area. The BCV recovery plan recognizes that such disturbances may create habitat for the species (USFWS 1991). Hydraulic shearing, chain sawing, and hand-cutting removes vegetation at ground level without seriously disturbing the topsoil (Ball and Taylor 2003); however, these practices may create the low, shrubby plants preferred by BCVs. The effects of mechanical brush management, stimulating vegetation by disturbances and subsequently generating habitat through succession (Koloszar et al. 2000), are self-mitigating and temporary in nature and should be followed by compatible land treatment practices.

Hand-cutting Ashe juniper, mesquite, or prickly pear by the use of hand tools, during the nesting season, may temporally disrupt territory defense, breeding, and foraging of the BCV (Campbell 1995). It is anticipated that this form of brush management will not be widely used due to the intensity of labor required and the minimal results it produces. Given that territory sizes range from 1 to 10 acres (0.4 to 4.0 hectares) , mostly 2 to 4 acres (0.8 to 1.6 hectares) (USFWS 1991), it is believed that the BCV should have ample area to disperse in a secluded part of its territory to avoid disturbance. Additionally, areas containing BCVs have relatively few mature Ashe juniper and mesquite (Leyva et al. 2002). In fact, it has been documented that BCVs select Ashe juniper less than what would be expected, based on availability of Ashe juniper, for nesting (J. Cornelius pers. comm. 2003). Therefore, it is anticipated that only temporal effects to the species will occur.

An increased, but unquantifiable, amount of cowbird parasitism may occur on BCV nesting due to improved livestock grazing conditions associated indirectly with brush management activities. LRRP participants, however, are integrating a cowbird trapping program in areas of cattle concentrations (Koloszar and Horne 2000), utilizing TPWD protocol, to reduce seasonal cowbird parasitism to below 35%, the maximum parasitism rate is believed to tolerate without decline (Eckrich et al. 1999).

Golden-cheeked Warbler

Practices such as water facility construction and pond construction will be implemented in accordance to the NRCS developed guidelines for the GCW and the revised GCW management guidelines. GCW take as a result of these practices is not anticipated.

This biological opinion focuses on the proposed practices that deviate from the revised GCW management guidelines. These practices include:

> 1) season of operation (August 1st - March 15th) for mechanical brush management (hydraulic shearing, hand-cutting, or chain sawing);
> 2) the thinning of mature Ashe juniper to a 15% juniper canopy cover while maintaining a total tree canopy of at least 75%; and
> 3) increasing fence and pipeline right-of-ways from the recommended management width of 16 feet to 20 feet (4.9 meters to 6.1 meters).

GCWs arrive in central Texas around March 1st and by early August leave for their southern wintering grounds. Nesting usually begins in April, and the nestlings fledge in May to early June (USFWS 2002). The GCW management guidelines recommend that selective removal of brush, if it is to occur adjacent to GCW habitat, be conducted during the non-breeding season (September-February) to avoid adverse impacts such as disturbance of nesting and feeding birds (Campbell 1995). The season of operation proposed within the NRCS guidelines (hydraulic shearing, chain sawing, and hand-cutting), beginning the last 31 days (August 1st - August 31st) of the breeding season and continuing through the first 15 days (March 1st- March 15th) of the onset of the breeding season, may have an effect on the GCW. The season of operation has the potential to temporally disrupt territory defense, breeding, and foraging (Campbell 1995). Since mechanical brush management should be a single event during the life of a LRRP contract, and hydraulic shearing, chain sawing, and hand-cutting removes vegetation at ground level without seriously disturbing the topsoil (Ball and Taylor 2003), it is anticipated that only temporal effects related to disruption, displacement, and/or harassment of the GCW will occur.

The thinning of mature Ashe juniper to a 15% juniper canopy cover while maintaining a total tree canopy of at least 75% may have an effect upon the GCW. The GCW management guidelines recommend that areas typically occupied by GCWs consist of mature Ashe junipers (trees with shedding bark) that are at least 15 feet (4.6 meters) in height with a trunk diameter of about 5 inches (127 millimeters) at 4 feet (1.2 meters) above the ground [dbh] with scattered oaks. These areas generally will have a nearly continuous canopy cover of trees with 50% to 100% canopy closure and an overall woodland canopy height of 20 feet (6.1 meters) or more (Campbell 1995). However, when mature Ashe junipers are abundant in the habitat, selective

removal of the trees for agricultural purposes will have little impact on the overall warbler habitat (Campbell 1995). Horne and Anders (2001) found that canopy height and number of trees per acre (hectare) did not influence the presence of GCW on Fort Hood; however, GCW occurrence was positively related to the number of mature Ashe juniper suggesting that GCWs may prefer mature forests over less mature forests. Additionally, Horne and Anders (2001) found the highest GCW occurrence in areas with a mixture of both mature Ashe junipers (10% to 25%) and hardwoods (75% to 90%).

Increasing fence and pipeline right-of-ways from the recommended management width of 16 feet to 20 feet (4.9 meters to 6.1 meters) may also have an effect upon the GCW. The GCW management guidelines recommend that new fence lines and livestock watering facilities (pipelines) be planned to avoid areas of habitat whenever possible. However, narrow linear openings, such as those needed for traditional agricultural management (fence lines and livestock water pipelines) will not harm GCW if openings (spaces between trunks or stems at 4 feet (1.2 meters) above the ground) are no greater than 16 feet (4.9 meters) in width. This width is large enough to allow for maintenance, while permitting the hardwood tree canopy to grow over the gap (Campbell 1995). Horne (2000), in a study at Ft. Hood, found that clearings less than 32 feet (10 meters) wide did not appear to greatly affect GCW territory placement, as about 80% of the territories would be expected to span an opening this wide. This is probably because, in general, canopies are not completely broken by openings less than 32 feet (10 meters) wide and thus may not be perceived as openings by the birds (Horne 2000). However, if a lower confidence interval is used, only 50% of the territories would be expected to span a corridor 32 feet (10 meters) wide (Horne 2000). Nonetheless, Horne (2000) cautioned about drawing conclusions about the effects of corridors less than 32 feet (10 meters) wide on GCW breeding habitat.

Additionally, due to an extensive and successful cowbird control program on Fort Hood (Eckrich et al. 1999), Horne (2000) was unable to detect cowbirds using strip transects along any of the corridors within the study area. Therefore, a relationship between cowbird abundance and corridor width could not be established. Based on field observations, however, there did not appear to be a difference in cowbird abundance among the corridor widths (Home 2000).

An increased, but unquantifiable, amount of cowbird parasitism may occur on GCW nesting due to improved livestock grazing conditions associated indirectly with brush management activities, fencing, and livestock water pipeline construction. LRRP participants, however, are integrating a cowbird trapping program in areas of cattle concentrations (Koloszar and Horne 2000), utilizing TPWD protocol, to reduce seasonal cowbird parasitism.

IV. Cumulative Effects

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to Section 7 of the Act.

Environmental Defense, Inc. [Environmental Defense] developed a Safe Harbor Agreement [SHA] and received a Section 10(a)(1)(A) Safe Harbor Enhancement of Survival Permit [permit] in 2000 (USFWS 2000a). This permit covers habitat restoration activities on private lands for the BCV and GCW in 25 Central Texas counties, including Coryell County.

The primary objective of the SHA is to encourage voluntary habitat restoration or enhancement activities to benefit BCVs and/or GCWs. Under the program, landowners may voluntarily enroll their lands under the SHA with Environmental Defense. As described in the SHA, enrolled landowners sign a Cooperative Agreement that specifies the management activities to be carried out on their lands that are expected to restore and enhance habitat for the BCV and/or GCW, and will receive a Certificate of Inclusion under Environmental Defense's permit. These actions, where appropriate, may include (but are not limited to) prescribed fire, protection of juniper-oak woodlands, improved grazing practices, selective brush management, cowbird control, and other activities. The SHA encourages such actions by ensuring that landowners will not be subjected to increased endangered species restrictions if their land stewardship results in increased populations of these two endangered species (USFWS 2000b).

To further encourage voluntary landowner assistance in conservation activities to benefit BCVs and GCWs, Environmental Defense has also initiated the "Hill Country Stewardship Program", which will help to underwrite the costs of such activities on private lands. With the assurances provided by the SHA and the financial incentives provided by the Hill Country Stewardship Program, many central Texas landowners may be willing to voluntarily undertake activities to conserve, protect, and/or enhance habitat for BCVs and GCWs (USFWS 2000b).

V. Conclusion

After reviewing the current status of the BCV and GCW, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the EQIP funding and the guidelines developed by the NRCS for the LRRP, as proposed, is not likely to jeopardize the continued existence of the BCV and GCW. No critical habitat has been designated for these species, therefore, none will be affected.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations pursuant to Section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.

Under the terms of Section 7(b)(4) and Section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary, and must be undertaken by the NRCS so that they become binding conditions of any grant or permit issued for the exemption in Section 7(o)(2) to apply. The NRCS has a continuing duty to regulate the activity covered by this incidental take statement. If the NRCS (1) fails to assume and implement the terms and conditions or (2) fails to require the EQIP participants to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of Section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the NRCS must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement. [50 CFR §402.14(i)(3)].

Amount or Extent of Take Anticipated

LRRP is expected to receive USDA funds annually until the next Farm Bill is authorized and funded, and possibly thereafter. EQIP contracts will be signed for periods up to 5 years. It is anticipated that approximately 60,000 acres (24, 282 hectares), 12,000 acres (4,856 hectares) annually, of land treatment practices will occur through the EQIP and implementation of NRCS guidelines for the LRRP during a 5 year period (G. Valentine pers. comm. 2003, S. Manning pers. comm. 2003). This information provides the basis for determining the amount or extent of anticipated take of both the BCV and GCW.

Black-capped Vireo

The Service anticipates incidental take of the BCV will be difficult to detect due to the number of acres (hectares) affected by the proposed project, the wide-range of the species on private lands, and the uncertainty of the location of nesting territories due to confidentiality clauses between researchers and private landowners. Therefore, the Service will use the amount of habitat affected as a surrogate for the species. The Service anticipates a maximum of 261 acres (106 hectares) annually of BCV habitat may be directly or indirectly impacted by brush management activities (hydraulic shearing, chain sawing, tree-grubbing, tree-dozing, and/or hand-cutting) associated with the project. This amounts to 1.2% of the estimated BCV habitat within the action area (R.N. Wilkins pers. comm. 2003). It is expected that the effects of brush management activities, implemented in the early stages of a LRRP contract, will be self-mitigating through stimulating vegetation by disturbances and subsequently generating BCV habitat through succession. Although a net increase of BCV habitat will be generated during the life of a LRRP contract, should incidental take exceed the maximum annual projected, the NRCS must reinitiate consultation with the Service.

The rational for the BCV take calculation is based on 2003 occupancy surveys which suggest 5.8% of the total treatable area in the action area is likely to contain BCVs, resulting in 696 acres (282 hectares) of habitat that may be included in the areas targeted for treatment annually (R.N.

Wilkins pers. comm. 2003). About 25% of the total operating window will overlap the times at which incidental take for the BCV could occur, meaning that an average of about 174 acres (70 hectares) may be at risk of take on an annual basis. However, given the fact that BCV habitat is clumped and operational logistics may cause this amount to vary on an annual basis, the maximum area that may be at risk during any one year could be as much as 50%, 87 acres (35 hectares), more than the multi-year average (R.N. Wilkins pers. comm. 2003). Thus, an area of 261 acres (106 hectares) is a more reasonable level to set for maximum allowable take during any given year.

Golden-cheeked Warbler

The Service anticipates incidental take of the GCW will be difficult to detect due to the number of acres (hectares) affected by the proposed project, the wide-range of the species on private lands, and the uncertainty of the location of nesting territories due to confidentiality clauses between researchers and private landowners. Therefore, the Service will use the amount of habitat affected as a surrogate for the species. The Service anticipates a maximum of 888 acres (359 hectares) of GCW habitat may be effected annually directly or indirectly by fencing, livestock water pipeline construction, and/or brush management activities (hydraulic shearing, hand-cutting, and/or chain sawing) associated with the project. This amounts to 1.7% of the estimated GCW habitat within the action area (R.N. Wilkins pers. comm. 2003). While this habitat, up to 888 acres (359 hectares) annually, may fall within the boundaries of mechanical brush management, fencing, or water pipeline right-of-ways, the treatment criteria and reasonable and prudent measures will minimize any impacts to the habitat. Should incidental take exceed the maximum annual projected amount during the life of the project, NRCS must reinitiate consultation with the Service.

The rational for the GCW take calculation is based on 2003 occupancy surveys which suggest 14.8% of the total treatable area in the action area is likely to contain GCWs, resulting in 1,776 acres (719 hectares) of habitat that may be included in the areas targeted for treatment (R.N. Wilkins pers. comm. 2003). More than 50% of this habitat can be found on landscapes with slopes exceeding a 15% gradient, thus inhibiting brush treatment by mechanical methods. Given this, we could expect less than 888 acres (359 hectares) of GCW habitat to be within the area targeted for treatment during any given year (R.N. Wilkins pers. comm. 2003).

Effect of the Take

In the accompanying biological opinion, the Service determined that the level of anticipated habitat take is not likely to result in jeopardy to the BCV or GCW or destruction or adverse modification of critical habitat. No critical habitat has been designated for these species, therefore, none will be affected.

Reasonable and Prudent Measures

Some of the measures below currently conform to NRCS guidelines, however, the Service believes that it is necessary to reiterate these measures as being reasonable and prudent within

this biological opinion. The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize impacts of incidental take of BCVs and GCWs:

1) Prior to implementation of any Ashe juniper removal, landowners, land managers, and/or contractors will attend a Texas Cooperative Extension course on brush management and be certified by the Texas Department of Agriculture. Course content will cover BCV and GCW species identification and life history, habitat identification, Endangered Species Act regulations, prescribed burning, proper selection and use of equipment, and revegetation of treated areas.

2) Project participants will have either a wildlife management plan prepared by TPWD or a conservation plan prepared by NRCS in accordance with BCV management guidelines, GCW management guidelines, or NRCS guidelines, as appropriate. The resource management systems planned by TPWD or NRCS are expected to increase total acres of BCV habitat throughout the life of a LRRP contract or are expected to reduce the stand composition of Ashe juniper and increase deciduous hardwoods that may benefit the GCW.

3) Support will be provided to Texas A&M University researchers investigating the influence of Ashe juniper and related land treatment practices on hydrology, ecology, rangeland recovery, and habitat suitability for the BCV and GCW. Occupancy probability models are expected to be developed from this research. Applicable adaptive management modifications derived from this research will be incorporated into the land treatment practices.

4) As part of the prescribed grazing standard on a project participants lands, a cowbird trapping program will be integrated in areas of cattle concentrations (Koloszar and Horne 2000), utilizing TPWD protocol, to reduce seasonal cowbird parasitism.

5) Cool season prescribed fires may only be conducted from November 1st to March 15th in BCV habitat.

6) Water storage facility construction and ponds will be planned to avoid GCW habitat.

7) In areas considered unsuitable as BCV habitat that are adjacent to GCW habitat, a minimum of 15% woody residual canopy cover will be maintained within a 300-foot (91 meters) perimeter of the GCW habitat to provide fledglings a degree of protection during short flights from the nest. In areas considered BCV habitat that are adjacent to GCW habitat, the BCV management guidelines, GCW management guidelines, and the reasonable and prudent measures contained within this biological opinion will apply.

Terms and Conditions

In order to be exempt from the prohibitions of Section 9 of the Act, the NRCS must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

> The NRCS (or the LRRP project officer at the NRCS' discretion) shall provide annual reports by October 1st for the life of the project to the Service documenting the implementation of the proposed action including the status of the project, extent of take of BCV and GCW habitat, and any conservation recommendations that are initiated. These annual reports shall be provided to the Arlington, Texas Ecological Services Field Office.

The Service anticipates a maximum of 261 acres (106 hectares) of BCV habitat and a maximum of 888 acres (359 hectares) of GCW habitat may be at risk annually by the proposed actions. The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The NRCS must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

The Service will not refer the incidental take of any migratory bird for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. §§ 703-712), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

Conservation Recommendations

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The following recommendation is provided for consideration by the NRCS:

> Utilize information gathered as part of ongoing LRRP research to develop/modify applicable land treatment practices that will provide added conservation benefits to both the BCV and GCW on a landscape level.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the Service requests notification of the implementation of this conservation recommendation.

Reinitiation Notice

This concludes formal consultation on the actions outlined in the request. As provided in 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

The Service appreciates the cooperation extended by the NRCS staff and participating parties during this consultation. If further assistance or information is required, please contact Mr. Steven D. Arey or myself at the above address or telephone (817) 277-1100.

Sincerely,

Tom Cloud

Thomas J. Cloud, Jr.
Field Supervisor

Enclosures

cc: State Administrator, Ecological Service, Austin, TX
Regional Director, FWS, Albuquerque, NM (Attn: ARD-ES)

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BCV Habitat Identification/Treatment Criteria
For
The Leon River Restoration Project
In Hamilton and Coryell Counties

Recognition of suitable habitat is the first step in insuring protection of endangered or threatened species. Habitat for the black-capped vireo *Vireo atricapilla* in Texas consists of a patchy distribution of shrub species with abundant foliage and branches near ground level. To aid in the identification of habitat, land within the range of the bird should be examined for the following two criteria. **These criteria must be met in order to consider an area as habitat.**

CRITERIA I. SPECIES COMPOSITION OF WOODY COVER (A or B)*

A. Where woody vegetation is dominated by any one of the following oaks, this criteria is met:

White shin oak, *Quercus sinuata var. breviloba*
Liveoak, *Quercus fusiformis*

OR

B. Where woody vegetation is composed of mixtures of species, the presence of at least four of the following species in significant amounts as co-dominants (each species contributes >15% to total canopy coverage) meets this criteria:

Liveoak, *Quercus fusiformis*
Texas oak, *Quercus buckleyi*
White shin oak, *Quercus sinuata* var. *breviloba*
Agarita, *Berberis trifoliolata*
Ashe juniper, *Juniperus ashei*
Ceanothus spp.
Cedar elm, *Ulmus crassifolia*
Deciduous holly, *Ilex decidua*
Forestiera spp.
Smilax spp.
Hackberry, *Celtis occidentalis*
Mexican-buckeye, *Ungnadia speciosa*
Pricklyash, *Zanthozylum hirsutum*
Redbud, *Cercis Canadensis*
Sophora spp.
Rhus spp.
Texas ash, *Fraxinus texensis*
Texas persimmon, *Diospyros texana*

Enclosure 1

CRITERIA 2. DENSITY OF LOW GROWING BRUSH

If the canopy at the three-foot height is >25% of the proposed treatment area as evidenced by a lack of an obvious browse line or severe hedging on the species listed above, this criteria is met.

Areas satisfying the above criteria but which occur in a bottomland setting dominated by large trees shall not be considered BCV habitat.

If suitable habitat exists based on above criteria, refer to the following Acceptable Conservation Treatment Guidelines:

ACCEPTABLE CONSERVATION TREATMENT GUIDELINES IN BLACK-CAPPED VIREO HABITAT

ACCEPTABLE CONSTRUCTION PRACTICES:

Cross fencing	Ponds
Livestock water pipelines	Diversions
Water storage facilities	

GRAZING MANAGEMENT GUIDELINES:

Domestic animal numbers will be managed to achieve proper degree of use (50%) on all of the species shown under Criteria 1 of Habitat Identification Criteria.

BRUSH MANAGEMENT GUIDELINES

Prior to using these brush management guidelines, landowners, land managers, or contractors will first attend a Texas Cooperative Extension brush management training course and be certified by the Texas Department of Agriculture.

1. Prescribed burning is acceptable as long as the interval between burns is at least five years. Prescribed burning can be an excellent tool used to maintain or create the desired vegetation structure for vireo nesting; i.e. a mosaic of shrubs and open grassland with abundant woody foliage below 10 feet. Cool season burns, conducted prior to March 15, are often recommended to control small juniper, thus maintaining the relatively open shrub lands preferred by vireos.

2. In unoccupied habitat of suitable composition, selective non-chemical methods of individual plant control on Ashe juniper, honey mesquite *Prosopis glandulosa*, and prickly pear *Opuntia* spp. (such as hydraulic shearing, hand cutting, grubbing, or tree-dozing) are acceptable as long as mottes of species listed in Criteria 1 are left intact, and Criteria 2 remains satisfied. Treated material will be situated within the habitat area to

enhance the use of fire where additional basal stimulation is required. In habitat where species composition does not require the use of fire, treated materials will be pulled away from the habitat.

3. In habitat known to be occupied, selective non-chemical methods of individual plant control on Ashe juniper, honey mesquite, and prickly pear (such as hydraulic shearing and hand cutting) are acceptable as long as mottes of species listed in Criteria 1 are left intact, and Criteria 2 remains satisfied. Treated material will be situated within the habitat area to enhance the use of fire where additional basal stimulation is required. In habitat where species composition does not require the use of fire, treated materials will be pulled away from the habitat.

4. Plant removal by grubbing and tree-dozing will not occur from March 1 to September 1. Removal by hydraulic shears and chain saws will not occur from March 15 to August 1. Use of hand tools, other than chain saws, is not restricted at this time.

5. Herbicidal control of mesquite and prickly pear according to label instructions is acceptable as long as the application of herbicide mixtures does not control any of the species listed under Criteria 1.

All landowners, land managers, or contractors certified by Texas Department of Agriculture in the use of these guidelines will receive blocks of instruction in the following:

1. **Habitat identification**
2. **BCV identification and history**
3. **ESA regulations**
4. **Use of prescribed burning to create and/or maintain habitat**
5. **Proper selection of equipment**
6. **Revegetation of treated areas**

GCW Habitat Identification/Treatment Criteria
For
The Leon River Restoration Project
In Hamilton and Coryell Counties

Recognition of suitable habitat is the first step in insuring protection of endangered or threatened species. Habitat for the golden-cheeked warbler *Dendroica chrysoparia* in Texas consists of a closed canopy of mixed stands of mature Ashe juniper *Juniperus ashei* and deciduous hardwoods. Mature Ashe junipers are at least 15 feet in height with a trunk diameter of 5 inches at 4 feet above the ground (dbh). Sites are usually, but not always, associated with steep topography and mesic conditions. Canopy coverage of Ashe juniper can vary from 5% to greater than 90%.

To aid in the identification of habitat, land within the range of the bird should be examined for the following three criteria. **These criteria must be met in order to consider an area as habitat.**

CRITERIA 1. CANOPY CLOSURE >50%

CRITERIA 2. MATURE ASHE JUNIPER STEMS >15 STEMS PER ACRE

CRITERIA 3. AT LEASE 10% OF THE TOTAL CANOPY MUST INCLUDE 2 OR MORE OF THE FOLLOWING SPECIES

Live oak, *Quercus fusiformis*
Blackjack oak, *Quercus marilandica*
Chinquapin oak, *Quercus muhlenbergii*
Post oak, *Quercus stellata*
Texas oak, *Quercus buckleyi*
White shin oak, *Quercus sinuata* var. *breviloba*
Big-tooth maple, *Acer grandidentatum*
Blackcherry, *Prunus serotina*
Bumelia, *Bumelia lanuginose*
Cedar elm, *Ulmus crassifolia*
Hackberry, *Celtis occidentalis*
Mulberry, *Morus rubra*
Pecan, *Carya illinoiensis*
Sycamore, *Platanus occidentalis*
Texas ash, *Fraxinus texensis*
Black walnut, *Juglans nigra*
Little walnut, *Juglans microcarpa*
Western soapberry, *Sapindus saponaria*

If suitable habitat exists based on the above criteria, refer to the following Acceptable

Conservation Treatment Guidelines:

ACCEPTABLE CONSERVATION TREATMENT GUIDELINES IN GOLDEN-CHEEKED WARBLER HABITAT

ACCEPTABLE CONSTRUCTION PRACTICES:

Fence (ROW's limited to 20 feet)
Pipeline (ROW's limited to 20 feet)
When both practices use the same ROW, width still limited to 20 feet
Watering Facility
Pond

GRAZING MANAGEMENT GUIDELINES

Domestic animals numbers will be managed to achieve proper degree of use (50%) on all of the species shown under Criteria 1 of Habitat Identification Criteria.

BRUSH MANAGEMENT GUIDELINES:

Prior to using these brush management guidelines, landowners, land managers, or contractors will first attend a Texas Cooperative Extension brush management training course and be certified by the Texas Department of Agriculture.

1. Within occupied habitat, removal of Ashe juniper less than 15 feet in height with a dbh of 5 inches can be done using hydraulic shears or hand cutting from August 1 to March 15.

2. Thinning mature juniper down to a 15% juniper canopy while maintaining a total tree canopy of at least 75% is allowable from August 1 to March 15. Do not thin in strips or other patterns.

3. Removal of Ashe juniper within 300 feet of known occupied habitat can be done using hydraulic shears or hand cutting from August 1 to March 15. In areas within the 300 foot buffer zone where total removal of Ashe juniper would deprive fledglings of protection during short flights from the nest, a percentage of Ashe junipers will be left.

All landowners, land managers, or contractors certified by Texas Department of Agriculture in the use of these guidelines will receive blocks of instruction in the following:

1. **Habitat identification**
2. **GCW identification and history**
3. **ESA regulations**
4. **Prescribed burning**
5. **Proper selection of equipment**
6. **Revegetation of treated areas**

Enclosure 2